



## **Northern Virginia Regional Commission**

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Water Docket  
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Department of Conservation and Recreation  
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**Re EPA Water Docket ID No. EPA-R03-OW-2010-0736, Draft Total Maximum Daily Load ("TMDL") for the Chesapeake Bay; and Virginia Chesapeake Bay Watershed Implementation Plan ("WIP")**

To Whom It May Concern:

The purpose of this letter is to provide joint comments on the United States Environmental Protection Agency's (USEPA) Draft Chesapeake Bay Total Maximum Daily Load (TMDL) and the Commonwealth of Virginia's Draft Chesapeake Bay TMDL Phase I Watershed Implementation Plan (WIP). The Northern Virginia Regional Commission (NVRC), a regional council of fourteen local governments in the Northern Virginia suburbs of Washington DC, had the honor of serving as a member of the Virginia Stakeholder Advisory Group (SAG) developed for providing input during the development of the draft Virginia WIP. The Commission staff appreciate the opportunity to provide comments on the referenced TMDL and draft WIP and commends both the USEPA and the Commonwealth of Virginia for the work product produced. With that being said, the Commission staff continues to have serious concerns with respect to some of the existing technical merits and policies established in the two documents and looks forward to working with all entities involved to improve and enhance the documents.

Generally speaking, the draft WIP should, but does not, clearly present:

- Current baseline loading across all Virginia Chesapeake Bays basins;
- Load reductions required for each of the Virginia Chesapeake Bay basins to achieve allocations;
- Best Management Practice (BMP) Implementation levels or management actions required for all source sectors to achieve allocations by Virginia Chesapeake Bay basin;
- Detail primary assumptions regarding management actions to be taken by source sector to achieve allocation load reductions;
- Timeline of what management actions will/should be taken to achieve the estimated load reductions in first 7 years through 2015, within the next 3 years (through 2020), and the subsequent 5 years (through 2025);
- Tracking and reporting system to track the status of implementation of management actions, or projections of load reductions due to implementation of management actions, or actual measurements/assessment of the water quality in the Bay and the contributing basins;
- Provide a complete Appendix detailing all Virginia Chesapeake Bay Watershed Model segment characteristics;
- Provide a complete Appendix identifying all Significant and Non-significant dischargers (Public and Private) along with all pertinent information;
- Provide a complete Appendix identifying all individual Virginia Pollutant Elimination System (VPDES) permit holders for industrial stormwater dischargers along with all pertinent data.

### **Modeling Concerns**

The Northern Virginia Regional Commission staff understands that the Chesapeake Bay Programs (CBP) Phase 5 Watershed Model (WSM) is a necessary tool in helping the Bay States in addressing tidal nutrient and sediment listings via the TMDLs and certain aspects of non-tidal TMDLs as well. The Commission staff are however concerned that the modeling framework has numerous sources of error and uncertainties that have directly influenced the results of the different management scenarios employed to develop the TMDL. Urban stormwater loads and implementation costs are highly sensitive to the assumptions regarding urban land use breakdown.

One of those concerns is the instability and application of the land use layer of the WSM. Upon examination of the Phase 5.3 modeling results it has become apparent that there are major discrepancies between the Phase 5.2 and Phase 5.3 extents of developed land within the developed land class. For the State of Maryland, between the CBP Phase 5.1/Phase 5.2 and CBP Phase 5.3 watershed models, there has been a decrease of approximately 500,000 acres (an approximate 40% decrease) in total urban land use throughout Maryland. While the urban impervious area has remained relatively constant between model phases (in the range of 230,000 - 250,000 acres), the change in total urban is primarily due to a dramatic decrease in urban pervious area. For the Commonwealth of Virginia's 2010 No Action Scenario, between Phase 5.2 and Phase 5.3 pervious high intensity was reduced by approximately 274,000 acres (71% decrease) and pervious low intensity was reduced by approximately 272,000 acres (27% decrease). Comparison between the Phase 5.2 land cover data and higher resolution land cover data obtained from several local governments within the State of Maryland and the Commonwealth of Virginia were made by several members of the CBP Urban Stormwater Work. These comparisons for the most part indicated an acceptable amount of error in the data sets given the lower resolution and broader scale.

The land cover discrepancy between the Phase 5.2 and the Phase 5.3 is explained by the Chesapeake Bay Programs Office (CBPO) Land Data Team's strict adherence to the information in United States Geological Surveys' new Chesapeake Bay Land Cover Data (CBLCD) series (land cover data for 1984, 1992, 2001, and 2006) for Phase 5.3 compared to the reliance on the Regional Earth Science Applications Center (RESAC) 2001 land cover augmented with ancillary information on populated residential road networks in Phase 5.2. The Data Team states there is a slight underestimate of impervious surfaces in Phase 5.3 vs. 5.2 even though the 2001 RESAC impervious surface data were used in both analyses. One possible explanation for this is because the overall extent of the developed classes in Phase 5.2 was larger than the extent of the CBLCD developed classes so more pixels in the 2001 RESAC impervious surface dataset were captured within Phase 5.2 developed areas.

Another stated reason is that the improved accuracy of the CBLCD series combined with methods for incorporating State-reported extractive lands in the Phase 5.3 dataset eliminated several large "impervious surface" areas from false inclusion in the Phase 5.3 developed classes whereas these areas were considered developed in Phase 5.2. Such areas have been determined to actually be quarries or surface mines and are classified as "extractive" in Phase 5.3.

The rate of change in impervious surface, which directly determines the estimated annual extent of "bare-construction" land use, also changed significantly between Phase 5.2 and Phase 5.3. This change is similarly due to reliance on the CBLCD series for Phase 5.3 to represent

change over the 20- year calibration period vs. the inference of pervious and impervious developed land change over 20-years in Phase 5.2 based on changes in total housing units.

These differences between the Phase 5.2 and 5.3 developed land uses have resulted in insufficient bare-construction lands for placement of erosion and sediment control BMP's and gross underestimation of the extent of low-intensity developed land uses which by default, are lumped into the forest/wooded land use in Phase 5.3 (as occurred with all "remainder" areas in Phases 5.0, 5.1, and 5.2).

Probable effect of changes on the Phase 5.3 land use dataset:

- The extent of impervious surfaces in all years will increase through the inclusion of impervious surfaces associated with roads and houses not detectable with Landsat satellite imagery. This change would increase the nutrient and sediment loads delivered to the Bay that are attributed to developed and non-forested lands in suburban, exurban, and rural areas;
- The extent of pervious developed lands in all years will increase through the inclusion of pervious lands associated with populated residential road networks, institutional grounds, and open lands. This change would increase the nutrient and sediment loads delivered to the Bay that are attributed to developed and non-forested lands in suburban, exurban, and rural areas;
- The extent of forest/wooded lands will decrease in all years and may mimic more closely the observed trends in forests noted by the USFS (downward trend since 1984);
- The rate of impervious surface change will increase over the current rate in Phase 5.3 but may not be as high as the rate of change in Phase 5.2. The rate will increase because it will now be partially related to the rate of housing change (and housing has increased at higher rates than developed land cover). The rate may not be as high as in Phase 5.2 because the rate will not be exclusively related to changes in housing. Estimates of the extent of developed lands based on changes in housing units from the present back through 1984 will not be allowed to fall below the detected extent of developed lands in the CBLCD series; and
- The extent of these changes will mostly impact the loads from suburban, exurban, and rural areas. Particularly in areas where a large percentage of new developed land is added, the contribution of nutrient and sediment loads from all other sources upstream of a calibration site will likely decrease, especially the wooded / open category. These changes will likely affect how target loads are distributed among the major basins within each jurisdiction. However, the degree to which these changes will impact the allocation of loads is uncertain and may be minor at the large major basin scale. The changes would also affect the acres available for applying BMPs.

The Northern Virginia Regional Commission staff recommends that documentation and operational procedures be developed by the CBPO Data Team to enable a local government to

present higher resolution land cover data for incorporation into the WSM. In those instances where a local government declines to provide data, or where this locally derived data is not available, the CBLCD will serve as a “backstop”.

Another issue of concern is the complexity and lack of accuracy of the Bay Program’s WSM when used to generate load estimates at the county or land-river segment level. The Commission staff does not believe that the WSM should be the main tool to determine accountability at the local level. In a review of the Phase 5 watershed model, by the Programs’ Science and Technical Advisory Committee (STAC), the Committee clearly stated that the WSM model was not appropriate for use at the local level, and would need recalibration and/or re-segmentation for this application.<sup>1</sup> It is therefore unclear why the Bay Program is continuing to promote the application of the WSM to determine local-level loads and allocations, and why EPA is calling for local allocations in the Phase 2 WIPs. This would appear to be an inappropriate application of watershed model to local level.

**Watershed and Sector Inequities**

The draft Virginia WIP proposes no waste water treatment plant improvements beyond the current permitted requirements. This situation is vastly different than the other reduction requirements being placed on the remaining sectors. This lack of additional removal requirements on the wastewater sector is not cost-effective and it places a larger financial burden on the remaining source sectors. Not only has this lack of action towards the wastewater sector resulted in an inequity between the sectors, but additionally it has resulted in inequity in allocations between the watersheds. This is evident within the table provided below which depicts the projected delivered per capita wastewater load by watershed.

Watershed	TN	TP <sup>2</sup>
		lb/capita/yr
		0.10
		0.25
		0.47
		0.51
		0.16
		0.30

<sup>1</sup> Scientific and Technical Advisory Committee. 2008a. Review of the Phase V Community Chesapeake Bay Watershed Model STAC Publication 08-003

<sup>2</sup> Allocations are based on 8/4 model run #4 corrected, personal email conversation, Russ Perkinson, VADCR, 09/13/2010 and U.S. Census Bureau, Population Division, 2009 Population Estimate, obtained from <http://www.census.gov/popest/files/CO-EST-2009-ALLDATA.csv> on 9/2010.

Wastewater treatment plant upgrades are the most cost-effective method of removing nutrients on a cost-per-pound basis while providing a very high level of reasonable assurance

Another inequity exists in that there are no reductions from estimated present loads for industrial VPDES permitted stormwater. The significance of this, besides the issue of equity, is that the Commonwealth of Virginia must deduct the industrial waste load allocation (WLAs) for facilities within the permitted Municipal Separate Storm Sewer System (MS4s) from the composite MS4 WLA. As a result, the differential MS4 load will be even higher since the estimated current Industrial stormwater loads are at much higher levels than the Everything, Everybody, Everywhere (E3) source sector allocations. WSM model assumptions are additionally called into questions as these industrial loads do not appear to match what the WSM loads per acre are, and are generally higher than the “no BMP loads” in the model.

As a further modeling issue with respect to the draft WIP, the combined sewer system (CSS) numbers submitted in the Virginia Department of Environmental Quality (VADEQ) watershed model input deck did not reflect any reduction associated with taking the stormwater component of CSS down to E3. Again, this impacts the MS4 WLA allocation negatively.

Northern Virginia Regional Commission staff requests that the Commonwealth of Virginia and the USEPA address the concerns noted above by removing the inequities in the Final Bay TMDL and the Final WIP.

### **Cost Concerns**

Local governments in Virginia strongly desire a constructive role in improving water quality in the Chesapeake Bay and all waters of Virginia. The Commission staff believes that a sound strategy for improving water quality to levels required by EPA will not succeed unless the economic costs associated with these efforts are fully understood, and a plan is developed for distributing these costs among the different levels of government. The USEPA need to understand that local governments in Virginia have major concerns about the costs that the TMDL initiative will impose upon local governments, especially with those associated with stormwater retrofits.

Unfortunately the USEPA has acknowledged in recent public meetings that the TMDL does not consider affordability or cost-effectiveness. Local governments have a responsibility to their citizens to seek cost-effective solutions. By ignoring cost, EPA’s disapproval of Virginia’s WIP essentially conflicts with the public interest in efficient and affordable regulations. The Commonwealth of Virginia additionally needs to undertake a cost analysis of the alternatives associated with individual allocation scenarios in the development of the Phase I and Phase II WIP. This analysis should be designed in a manner in which every local government will be able